APPARATUS FOR FORMING AN ARTICULATED TRACK

This invention relates to an articulated track, especially a mobile machine-tool cover or chip conveyor device, comprising a number of pivotally interconnected similar members, having on the side adjacent the neighboring member a coupling projection with a rotationally similar outer profile, and on the opposite side a coupling recess shaped in complementary manner.

As covers for machine tools, such as used for instance for machine pits for protection against falling chips, there are inter alia known steel bands with stiffening webs provided on the underside and which either have to be rolled up or when used drawn out to a straight covering surface. A disadvantage of such covers lies in the considerable manufacturing costs involved in achieving adequate stiffness in the cover.

Conveyor belts made of woven fabric and provided with applied ribs are also known for conveying chips, but these have only a low strength and no appreciable stiffness.

Finally, plastic rollers of the type initially described are known in the furniture industry: in these the coupling projections are formed directly on the one end surface of the individual members, with the pivoting angle between adjacent members being determined by the end faces of the webs which bound the coupling recess. In this case there are always externally open gaps between adjacent members, which both involve an undesirable source of possible accident (trapping fingers and the like) and also form traps for dirt.

The object of the invention is to provide an articulated track suitable especially for a machine-tool cover or chip conveyor device, and which while involving low costs for manufacture and installation ensures high stiffness, and which even in the curved sections of its movement tract provides no places which could cause accidents or tend to accumulate dirt.

According to the invention this object is achieved in that the coupling projection, carried on a web, of one member forms in conjunction with the two end surfaces adjacent the web of this member a pair of recesses, wherein the two arms of the adjacent member which limit the coupling recess can engage in manner such that in any position of relative rotation the outer faces of the arms are covered at least at their ends by the corresponding end surfaces.

This covering prevents the forming of any opening which could involve a risk of accident or the penetration of dirt and foreign particles. The articulated track in accordance with the invention is therefore notable for its high operational reliability and very limited need for maintenance.

From the manufacturing aspect, the invention enables very stable and stiff articulated tracks to be made compartively cheaply. The arms carried in the said recesses ensure a smooth transition on changes of curvature in the path of motion, and so permit particularly quiet and low-wear running of the articulated track.

These and further details of the invention appear from the following description of one embodiment, shown in the drawings. In these:

FIG. 1 is a section through an articulated track in accordance with the invention;

FIG. 2 is a plan view of an articulated track formed as a chip-conveying device.

The machine-tool cover 1 in accordance with the invention, as shown schematically in section by FIG. 1, comprises a number of similar members 2, 2', 2'' etc., whereof the member 2 will be described in more detail below.

On the one side it has a coupling projection 3 with a cylindrical external profile, and on the other side a complementary shaped coupling socket or recess 4. This coupling recess 4 is bounded by two arms 5 and 6, leaving between them an aperture 7 whose width exceeds that of the web 8 which connects the coupling projection 3 with the main body of the member 2.

In this manner the individual members can make a pivotal movement relative to each other, with the stretched position limited by the end face 5*a* of the arm 5, and the outermost pivoted position limited by the end face 6*a* of the arm 6, which in the said two positions come into contact with the web 8.

Adjacent the web 8 are two end surfaces 9*a*, 9*b*, which together with the web 8 and the coupling projection 3 form two recesses wherein the two arms 5, 6 of the adjacent member can engage in manner such that in any relative angular position the outer surfaces 5*b*, 6*b* of the arms have at least their ends covered by the corresponding end surfaces 9*a*, 9*b*. In this way neither dirt nor foreign matter can enter the aperture 7, nor is there any possible source of accidents in the area of the aperture.

On their outer side the arms 5, 6 have a partly cylindrical profile. The end surfaces 9*a*, 9*b* may also have a partly cylindrical profile, with a radius of curvature and center of curvature corresponding to those of the outside of the arms. In this case the surfaces 5*b* and 9*a* (of adjacent members) are in sliding contact with each other, insofar as they overlap, as are the surfaces 6*b* and 9*b*.

The construction may however also be selected so that the end surfaces 9*a*, 9*b* have a profile which differs in radius and/or center of curvature from the outer surfaces 5*a*, 6*b*, with the end surfaces 9*a*, 9*b* lying with their outer edges against the outer surfaces 5*b*, 6*b* of the arms. If the members are made of resilient plastic it may be desirable to have the two outer edges of the end surfaces 9*a*, 9*b* lying with a resilient pre-tension against the outer surfaces 5*b*, 6*b* of the adjacent member. This construction produces very effective sealing between adjacent members.

In the embodiment in FIG. 1, the two arms 5, 6 which form the limits of the coupling recess 4 are made of unequal length, and their end surfaces 5*a*, 6*a* limit the extended position and the maximum pivoted position of the two adjacent members. Instead of this, constructions are however possible wherein the limitation of the extreme pivoted position is provided by other surfaces of the members, for instance by the outer edges of the end surfaces 9*a*, 9*b*.

In the embodiment in FIG. 1, the member 2, preferably formed from glass-fiber reinforced plastic by an injection moulding or extrusion process, forms an integral plate of constant profile extending transversely of the direction of movement of the cover (arrow 10). In order to protect adjacent members, e.g., 2 and 2', from lateral displacement (perpendicular to the plane of the drawing), the coupling projections 3 are given a central hole 11 extending from one outer side to the other, and preferably formed during extrusion. Lateral fixing plates for instance are then anchored in this hole.